

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
9 June 2005 (09.06.2005)

PCT

(10) International Publication Number  
**WO 2005/052378 A1**

(51) International Patent Classification<sup>7</sup>: F04D 29/42,  
29/16, 29/62

(21) International Application Number:  
PCT/GB2004/004751

(22) International Filing Date:  
11 November 2004 (11.11.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
0326534.5 14 November 2003 (14.11.2003) GB

(71) Applicant (for all designated States except US): WEIR  
WARMAN LIMITED [GB/GB]; Halifax Road, Todmor-  
den, Lancashire OL14 5RT (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): CLARENCE,  
Nigel, Paul [GB/GB]; 406 Birch Road, Wardle, Rochdale,

Lancashire OL12 9LX (GB). COLLINGS, Richard, J.  
[GB/GB]; Spinney Hill, Cutsey, Trull, Taunton, Somerset  
TA3 7NY (GB). WELLS, Ian, Howard [GB/GB]; 4  
Church Lane, Whalley, Clitheroe, Lancashire BB7 9SY  
(GB).

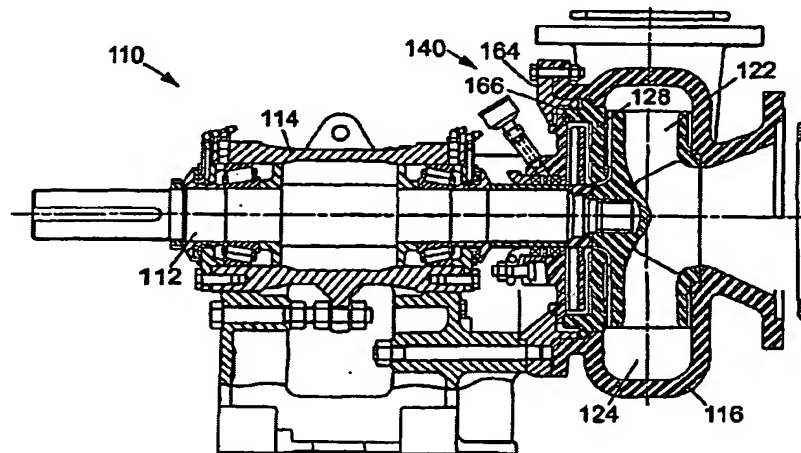
(74) Agents: SZCZUKA, Jan, Tymoteusz et al.; Marks &  
Clerk, 19 Royal Exchange Square, Glasgow G1 3AE (GB).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: PUMP INSERT AND ASSEMBLY



(57) Abstract: A pump insert (128) has an inner surface which in use defines a portion of a volute (124) of a pump (110) wherein said pump insert (128) is adapted to be coupled with a pump casing (116) by an inter-engaging profiled coupling arrangement (166). In one disclosed embodiment the pump insert (128) is adapted to engage a pump casing closure plate (148) which is locatable about a pump shaft (112) and between the pump insert (148) and the pump casing (110).

WO 2005/052378 A1